

What Is Claimed Is:

1. Apparatus suitable for filtering emboli comprising:

an elongated member having a distal region;  
a support hoop attached to the distal region,  
the support hoop having an articulation region; and  
a blood permeable sac affixed to the support  
hoop, the support hoop forming a distally-facing mouth  
of the blood permeable sac.

2. The apparatus of claim 1 further  
comprising a delivery sheath having a proximally-facing  
cavity for accepting the elongated member, support hoop  
and blood permeable sac.

3. The apparatus of claim 2 further  
comprising a guide wire slidably attached to the  
elongated member.

4. The apparatus of claim 1, wherein the  
blood permeable sac comprises a biocompatible material.

5. The apparatus of claim 4, wherein the  
biocompatible material comprises a material chosen from  
a group consisting of polyethylene, polypropylene,  
polyurethane, polyester, polyethylene tetrathalate,  
nylon and polytetrafluoroethylene.

6. The apparatus of claim 1, wherein the  
blood permeable sac comprises a plurality of pores.

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7. The apparatus of claim 6, wherein each one of the plurality of pores has a diameter in a range of 20 to 400 microns.

8. The apparatus of claim 1, wherein the blood permeable sac comprises a plurality of pores formed by laser drilling.

9. The apparatus of claim 1, wherein the support hoop comprises a super-elastic material.

10. The apparatus of claim 9, wherein the super-elastic material comprises a nickel-titanium alloy.

11. The apparatus of claim 1, wherein the support hoop comprises a wire having a thickness that tapers to a minimum thickness at the articulation region.

12. The apparatus of claim 3 wherein the elongated member abuts against an interior surface of the cavity so that distal translation of the elongated member is transmitted to the delivery sheath.

13. The apparatus of claim 1, wherein the apparatus has a deployed state, wherein the support hoop engages an interior wall of a patient's vessel, and a delivery state, wherein the apparatus has a contracted configuration to permit insertion of the elongated member, support hoop, and blood permeable sac within the delivery sheath.

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14. The apparatus of claim 13, wherein the support hoop is folded at the articulation region when the apparatus is in the delivery state.

15. The apparatus of claim 13, wherein the mouth of the blood permeable sac is closed when the apparatus is in the contracted configuration, thereby preventing emboli from escaping from the blood permeable sac.

16. The apparatus of claim 15 wherein opposite sides of the support hoop close towards one another when the apparatus is contracted to its contracted configuration.

17. The apparatus of claim 2, wherein the delivery sheath further comprises a radiopaque feature.

18. The apparatus of claim 1, wherein the support hoop further comprises a radiopaque feature.

19. The apparatus of claim 3 further comprising a lumen extending through the cavity, the guide wire rigidly received within the lumen.

20. The apparatus of claim 1, wherein the blood permeable sac is affixed to the elongated member along a length of the blood permeable sac.

21. The apparatus of claim 1, wherein the blood permeable sac has a length and a diameter that tapers along the length.

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22. The apparatus of claim 1, wherein the articulation region comprises a gap, the gap bridged by a portion of the blood permeable sac.

23. The apparatus of claim 2 further comprising a lumen extending through a distal end of the delivery sheath to permit the elongated member to pass therethrough.

24. The apparatus of claim 2 further comprising a window disposed proximal of the cavity.

25. The apparatus of claim 24, wherein the apparatus has a deployed state, wherein the support hoop expands through the window to engage an interior wall of a patient's vessel, and a delivery state, wherein the apparatus has a contracted configuration to permit insertion of the elongated member, support hoop, and blood permeable sac within the cavity of the delivery sheath.

26. The apparatus of claim 9, wherein the super-elastic material comprises a spring tempered stainless steel.

27. The apparatus of claim 3, wherein the elongated member comprises a deployment sheath.

28. The apparatus of claim 27 further comprising a lumen extending through a distal end of the delivery sheath to permit the guide wire to pass therethrough.

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29. The apparatus of claim 28 further comprising a position indication restraint attached to a distal end of the guide wire.

30. The apparatus of claim 29, wherein the restraint is radiopaque.

31. The apparatus of claim 27 further comprising a window disposed proximal of the cavity.

32. The apparatus of claim 31, wherein the apparatus has a deployed state, wherein the support hoop expands through the window to engage an interior wall of a patient's vessel, and a delivery state, wherein the apparatus has a contracted configuration to permit insertion of the deployment sheath, support hoop, and blood permeable sac within the cavity of the delivery sheath.

33. The apparatus of claim 4, wherein the biocompatible material is formed into the blood permeable sac by a thermoforming process.

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